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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,060	01/30/2004	James B. Mobley	DC-05581	7029

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EXAMINER

LEE, BENNY T

ART UNIT	PAPER NUMBER
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2817

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/769,060	MOBLEY ET AL.	
	Examiner	Art Unit	
	Benny Lee	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5; 6-10; 11-15; 16-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

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The disclosure is objected to because of the following informalities: Page 5, in the heading, note that --**OF THE PREFERRED EMBODIMENTS**-- should be inserted after "**DETAIL DESCRIPTION**" as to be consistent with PTO guidelines. Page 8, paragraph [029], 6th line therein, note that "incn" should correctly be --inch-- for an appropriate characterization. Page 9, paragraph [034], penultimate line, note that "trace #5 of Figure 5" does not appear consistent with the labeling therein. Note that reference labels (120, 130, 140) appearing in Figures 2, 3, 4, respectively need a corresponding description in the specification. Also, note that the "performance curves" as labeled in "Figure 6" need to be correspondingly described in the specification. Appropriate correction is required.

The drawings are objected to because of the following: In Fig. 2, note that the drawing figure needs to be labeled --PRIOR ART-- for an appropriate characterization; In Fig. 4, note that reference labels --W-- & --144-- need to be respectively provided such as to be commensurate with the description at paragraphs [024] & [025]. In Fig. 5, note that for "trace #1", the reference label --3w-- needs to be provided such as to be commensurate with the description in paragraph [030].

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

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drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following claims have been found to be objectionable for reasons set forth below:

In claims 7-10, 17-20, note that these claims should be rewritten to include "active steps" commensurate with recitation of "method" claim limitations. Appropriate correction should be provided.

In claims 7, 8, 17, 18, third line in each claim, note that "disposed" should be rewritten as --formed-- as to be commensurate with the "method" format of these claims.

In claims 10, 20, note that "further comprising" should be rephrased as to define a further method step such as to be consistent with the method nature of these claims.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4; 6-9; 11-14; 16-19 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Otaki et al.

Otaki et al, with regard to Fig. 1 in general, discloses a printed circuit board (100) having various integrated circuits (i.e. ICs) disposed hereon, including clock generator IC (102), SDRAM IC (103, 104, 105), etc disposed on the printed circuit board as to define components in an "information handling system", such as conventionally recognized in the art. Note that a plurality of conductive wiring patterns (110, 140, 150) is disposed on the printed circuit board to electrically connect the clock generator IC (102) to each of the SDRAM ICs (103, 104, 105). Note in particular that conductive wiring patterns (140, 150) include as a part thereof, a respective inductive pattern (e.g. 141, 151) and a corresponding capacitive pattern or "tabs" (e.g. 142, 152). In operation, the clock signals propagating along conductive wiring patterns (110, 140, 150) would have experience differing time delays as the signals propagate from the clock generator IC to the corresponding SDRAM IC, by virtue of their differing physical lengths (e.g. see discussion at column 9, line 20 to column 10, line 4). However, by using the wiring patterns (140, 150) including the inductive pattern (e.g. 141, 151) and capacitive patterns or tabs (142, 152), such conductive wiring patterns are compensated to provide substantially the same propagation delay as that provided by the longer conductive wiring pattern (110 of 9 cm length), such that the clock signals arrive at each SDRAM at about the same time. For example, see the discussion at column 10, lines 4-23. Note, with respect to Figs. 12-18, that alternative inductive patterns and capacitive patterns or tabs are disclosed which can be used with and are consistent with the general inventive concept set forth with respect to Fig. 1 inventive concept. For example, in Figs. 12-15, the inductive patterns (e.g. 13, 15, 17, 19) are linear in form and the capacitive patterns or tabs (e.g. 14, 16, 18, 20) are oriented 90 degrees relative to the linear pattern. Additionally, with respect to Figs. 12, 13, 14, the capacitive patterns have a triangular

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shape, thereby providing an edge, which is oriented at an angle less than 90 degrees.

Alternatively, with respect to Figs. 16, 17, the inductive patterns can take the form of a serpentine shape (e.g. 22, 23) with a corresponding capacitive pattern (e.g. 22, 24) disposed with respect to the serpentine shape.

Claims 1, 5; 6, 10; 11, 15; 16, 20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lakin.

Lakin discloses a coplanar balance transmission line disposed on a substrate or printed circuit board (i.e. 16 in Fig. 2B) and is comprised first and second linear conducting strips (15) having a plurality of conductive fingers (e.g. 17) which extend from each conducting strip (15), such as to form an interleaved or interlaced configuration of "interdigital" capacitors, as evident from Fig. 2A and described at column 4, lines 29-36. It should be noted that these interleaved fingers providing interdigital capacitance necessarily function as "compensation tabs" in that they provide a reduction in phase velocity for a signal propagating through the transmission line (e.g. see column 2, lines 8-12), thereby compensating or matching of propagating characteristics relative to adjacent propagating structures, as exemplarily suggested at column 1, lines 32-35.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5; 6, 10; 11, 15; 16, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hailey et al in view of Otaki et al.

Hailey et al discloses a data (i.e. information) processing system (e.g. see Fig. 10) comprising a plurality of differential trace pairs (801-808) disposed on a printed circuit board (550) as depicted in Fig. 8. Moreover, note that each differential pair includes a length equalization feature (810) to correct for different lengths associated with the differential pair. Note that such length equalization features can take the form of a zigzag or wave like pattern. However, Hailey et al differs from the claimed invention in that it does not disclose a compensation tab as a length equalization feature, such as claimed.

Otaki et al, as described in the above rejection, discloses the use of capacitive patterns or tabs, which function to provide the function of compensating or equalizing length differences in different transmission lines.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have substituted the compensating patterns or tabs as exemplarily taught in Otaki et al (e.g. those in Figs. 13 or 14) in place of the zigzag or wave like compensation or equalization feature of the differential line pairs taught in Hailey et al. Such a modification would have been considered an obvious substitution of art recognized equivalent length compensation or equalization features. It should be noted that the length equalization feature in Fig. 8 of Hailey et al is analogous in

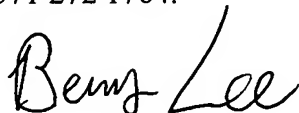
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function to the zigzag conductive patterns (121, 131) of the prior art configuration in Fig. 19 of Otaki et al. Since Otaki et al recognizes that the compensation patterns or tabs (e.g. those disclosed in figs. 13, 14) perform an analogous function to the zigzag pattern of the prior art in Fig. 19 (which is analogous to the Fig. 8 configuration in Hailey et al), this would have suggested the obviousness of using the functionally analogous compensation tabs, exemplarily taught by Otaki et al, in place of the zigzag or wave like conductive patterns in Hailey et al (Fig. 8), as to provide the equivalent length equalization or compensation effect for the differential line pairs disclosed therein, thereby suggesting the obviousness of such a modification. Note that as an obvious consequence of using either one of the compensation pattern or tab configurations in Figs. 13 or 14 of Otaki et al in the differential pair configuration of Hailey et al, at least some of such compensating patterns or tabs would necessarily have to face each other in an interleaved pattern, when applied to the differential line pair configuration of Hailey et al, thereby rendering obvious such a combination.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Honjo and Mullen both pertain to transmission line arrangements on a printed circuit board configured to provide equalization of signal propagating delay..

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.



B. Lee

BENNY T. LEE
PRIMARY EXAMINER
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